

What is claimed is:

1. A cap and container assembly comprising:

a container and a cap;

the container including a base, and a neck for engagement with the cap, an end of the neck defining a container mouth;

the neck being substantially symmetrical about a central vertical axis, the neck forming a flexible lip, proximate the mouth, with an upper, generally frusto-conical, exterior sealing surface, the neck further forming a lower, generally frusto-conical, interior sealing surface, the neck further forming an exterior circumferential shoulder of greater diameter than a diameter of the lip;

the cap including a top, a skirt depending peripherally from the top, first and second annular sealing protrusions depending from an interior surface of the top, and at least one stopping projection on an interior surface of the skirt;

the top being generally convex as viewed from inside the cap;

wherein, upon securing engagement of the skirt with a bottom section of the neck, the first sealing protrusion sealingly engages the lower interior sealing surface, and the second sealing protrusion sealingly engages the upper exterior sealing surface; and

wherein the shoulder and the at least one stopping projection engage to form a positive stop to lower engagement of

25 the cap with respect to the container, ensuring sealing contact
26 between the first sealing protrusion and the lower interior
27 sealing surface and between the second sealing protrusion and the
28 upper exterior sealing surface, and forming a gap between a
29 bottom edge of the cap and an upper part of the base.

1 2. A cap and container assembly as in claim 1 wherein an
2 intersection of the upper exterior sealing surface with any plane
3 which includes the central vertical axis would form a straight
4 line segment which would form an angle of about 10° to about 20°
5 with its projection on an imaginary horizontal plane, and an
6 intersection of the lower interior sealing surface with any plane
7 which includes the central vertical axis would form a straight
8 line segment which would form an angle of about 10° to about 20°
9 with its projection on a surface of an imaginary vertical
10 cylinder.

11 *Sub B1*
1 3. A cap and container assembly comprising:

2 a container and a cap;

3 the container including a base, and a neck for sealing
4 engagement with the cap, an end of the neck defining a container
5 mouth;

6 wherein stopping surfaces of the cap and the container
7 engage to form a positive stop to lower engagement of the cap
8 with respect to the container.

1 4. A cap and container assembly as in claim 3, the stopping
2 surfaces comprising at least one stopping projection on an
3 interior surface of the cap and a shoulder on an exterior surface
4 of the neck.

1 5. A cap and container assembly as in claim 3, wherein a gap
2 remains between a bottom edge of the cap and an upper part of the
3 base, upon engagement of the stopping surfaces.

1 6. A cap and container assembly as in claim 3, wherein the
2 sealing engagement of the cap with the neck temporarily deforms a
3 shape of at least one of a group consisting of the cap and the
4 neck, and wherein an extent of said deformation can be limited
5 upon engagement of the stopping surfaces.

1 7. A cap and container assembly as in claim 3, the cap including
2 at least one annular protrusion which can sealingly engage an
3 interior surface of the neck.

Sub A2
1 8. A cap and container assembly as in claim 3, the cap including
2 at least one annular protrusion which can sealingly engage an
3 exterior surface of the neck.

1 9. A cap and container assembly as in claim 3, the cap including
2 at least one first annular protrusion which can sealingly engage
3 a first surface of the neck and at least one second annular

4 protrusion which can sealingly engage a second surface of the
5 neck.

Sub A3
1 ~~10. A cap and container assembly as in claim 9, wherein an~~
2 ~~interior surface of the neck includes the first surface, and an~~
3 ~~exterior surface of the neck includes the second surface.~~

1 ~~11. A cap and container assembly as in claim 10, the cap further~~
2 ~~including a top and a skirt depending peripherally from the top;~~
3 ~~wherein the cap can be secured to the container by threading~~
4 ~~engagement of a threaded-portion of an interior surface of the~~
5 ~~skirt with a threaded-portion of the exterior surface of the~~
6 ~~neck, the first and second protrusions depend from an interior~~
7 ~~surface of the top, and the stopping surfaces comprise at least~~
8 ~~one stopping projection on the interior surface of the skirt and~~
9 ~~a shoulder on the exterior surface of the neck above the~~
10 ~~threaded-portion of the exterior surface of the neck.~~

1 ~~12.~~¹⁴ A cap and container assembly comprising:
2 a container and a cap;
3 the container including a base, and a neck for engagement
4 with the cap, an end of the neck defining a container mouth;
5 the neck being substantially symmetrical about a central
6 vertical axis, the neck forming a flexible lip, proximate the
7 mouth, with an upper, generally frusto-conical, exterior sealing
8 surface, the neck further forming a lower, generally frusto-

9 conical, interior sealing surface, the neck further forming a
10 bottom exterior surface, of greater diameter than the diameter of
11 the lip, for securing engagement with the cap;

12 the cap including a top, a skirt depending peripherally from
13 the top, at least one first annular sealing protrusion depending
14 from an interior surface of the top, and at least one second
15 annular sealing protrusion depending from the interior surface of
16 the top;

17 wherein, upon securing engagement of the skirt with the
18 bottom exterior surface of the neck, the at least one first
19 sealing protrusion sealingly engages the lower interior sealing
20 surface, and the at least one second sealing protrusion sealingly
21 engages the upper exterior sealing surface.

15
1 13. A cap and container assembly as in claim 12, wherein the
2 sealing engagement of the sealing protrusions with the sealing
3 surfaces, respectively, temporarily deforms a shape of at least
4 one of a group consisting of the cap and the neck.

14
1 14. A cap and container assembly as in claim 12, the top of the
2 cap being generally convex as viewed from inside the cap.

17
1 15. A cap and container assembly as in claim 12, the cap further
2 including an additional annular protrusion depending from the
3 interior surface of the top, the additional annular protrusion
4 being radially outside of the first and second sealing

5 protrusions and, upon engagement of the cap with the container,
6 radially outside of the lip;

7 the additional annular protrusion being sufficiently rigid
8 and extending low enough and close enough to the flexible lip,
9 upon engagement of the cap with the container, to resist the lip
10 from moving outwardly.

1 ¹⁸~~16.~~ A cap and container assembly as in claim ¹⁴~~12~~, wherein the cap
2 is manufactured of a flexible plastic material.

1 ¹⁹~~17.~~ A cap and container assembly as in claim ¹⁴~~12~~, wherein the
2 container is manufactured of a flexible plastic material.

Add A4